

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1           39. (previously presented) A method for early detection of subacute, potentially  
2 catastrophic illness in an infant comprising:

3           (a) monitoring time series of RR intervals in the infant;

4           (b) identifying at least one characteristic abnormal pattern or distribution; and

5           (c) correlating the at least one abnormal pattern or distribution with said illness.

1           40. (previously presented) The method of claim 39, wherein the illness is infectious.

1           41. (previously presented) The method of claim 40, wherein antibiotic therapy is  
2 initiated and a diagnostic work-up for the illness, comprising obtaining a blood culture from the  
3 patient, is provided when the at least one characteristic abnormal pattern or distribution is  
4 identified.

1           42. (previously presented) The method of claim 40, wherein the illness is necrotizing  
2 enterocolitis.

1           43. (previously presented) The method of claim 42, wherein a diagnostic work-up for  
2 the illness, comprising an X-ray of the infant or a pathological specimen from the infant, is  
3 provided when the at least one characteristic abnormal pattern or distribution is identified.

1           44. (previously presented) The method of claim 40 wherein the illness is selected from  
2 the group consisting of pneumonia, sepsis, and meningitis.

1           45. (previously presented) The method of claim 68, wherein the data set is normalized.

1           46. (previously presented) The method of claim 45, wherein the data set contains on the  
2 order of about  $10^3$  to  $10^4$  sequential RR intervals.

1           47. (previously presented) The method of claim 45, wherein the at least one  
2 characteristic abnormal pattern or distribution is identified based on at least one of the third and  
3 higher moments of the data set.

1           48. (previously presented) The method of claim 47, wherein the at least one moment of  
2 the data set includes the skewness of the data set.

1           49. (previously presented) The method of claim 48, wherein the illness is sepsis or  
2 necrotizing enterocolitis.

1           50. (withdrawn-previously presented) The method of claim 47, wherein the at least one  
2 moment of the data set includes the kurtosis of the data set.

1           51. (withdrawn-previously presented) The method of claim 50, wherein the illness is  
2 sepsis or necrotizing enterocolitis.

1           52. (previously presented) The method of claim 45, wherein the at least one  
2 characteristic abnormal pattern or distribution is identified based on at least one percentile value  
3 of the data set.

1           53. (previously presented) The method of claim 52, wherein the at least one percentile  
2 value is the 10<sup>th</sup> percentile value.

1           54. (previously presented) The method of claim 53, wherein the illness is sepsis or  
2 necrotizing enterocolitis.

1           55. (previously presented) The method of claim 45, wherein the at least one  
2 characteristic abnormal pattern or distribution is identified based on the variance, standard  
3 deviation or coefficient of variation of the data set.

1           56. (previously presented) The method of claim 55, wherein the illness is sepsis or  
2 necrotizing enterocolitis.

1           57. (previously presented) The method of claim 49, further comprising a diagnostic  
2 work-up.

1           58. (withdrawn-previously presented) The method of claim 50, further comprising a  
2 diagnostic work-up.

1           59. (previously presented) The method of claim 53, further comprising a diagnostic  
2 work-up.

1           60. (previously presented) The method of claim 55, further comprising a diagnostic  
2 work-up.

1           61. (previously presented) The method of claim 39, wherein a diagnostic work-up is  
2 provided when the at least one characteristic abnormal pattern or distribution is identified.

1           62. (previously presented) The method of claim 39, wherein the infant is a neonate.

1           63. (withdrawn-original) A method for early detection of subacute, potentially  
2 catastrophic illness in an infant comprising:

3           (a) monitoring the infant's RR intervals;

4           (b) generating a normalized data set of the RR intervals;

5           (c) calculating one or more of (i) moments of the data set selected from the third and  
6 higher moments and (ii) percentile values of the data set; and

7 (d) identifying an abnormal hear rate variability associated with the illness based on one  
8 or more of the moments and percentile values.

1 64. (withdrawn-previously presented) The method of claim 53, wherein the moments  
2 include the third moment of the data set.

1 65. (withdrawn-previously presented) The method of claim 63, wherein the moments  
2 include the fourth moment of the data set.

1 66. (withdrawn-previously presented) The method of claim 63, wherein the percentile  
2 values include the 10<sup>th</sup> data percentile value.

1 67. (withdrawn-previously presented) The method of claim 64, wherein the infant is a  
2 neonate.

1 68. (previously presented) The method of claim 39, wherein the at least one  
2 characteristic abnormal pattern or distribution is identified from a data set of RR intervals.

1 69. (previously presented) An apparatus for early detection of subacute, potentially  
2 catastrophic infectious illness in a patient, wherein the patient is an infant, a newborn infant, a  
3 toddler, or a child, the apparatus comprising:

4 (a) a monitoring device, continuously monitoring time series of RR intervals in the  
5 patient; and

6 (b) a microprocessor, identifying at least one characteristic abnormal pattern or  
7 distribution in the RR intervals that is associated with the illness.

1 70. (Canceled)

1 71. (previously presented) The apparatus of claim 69, wherein the microprocessor  
2 performs the step of generating a normalized data set of RR intervals.

1           72. (previously presented) The apparatus of claim 71, wherein the microprocessor  
2 calculates one or more of the third and higher moments of the data set and identifies the  
3 characteristic abnormal pattern or distribution based on the one or more moments.

1           73. (previously presented) The apparatus of claim 72, wherein the microprocessor  
2 calculates the skewness of the data set and identifies the characteristic abnormal pattern or  
3 distribution based on the skewness.

1           74. (withdrawn-previously presented) The apparatus of claim 72, wherein the  
2 microprocessor calculates the kurtosis of the data set and identifies the characteristic abnormal  
3 pattern or distribution based on the kurtosis.

1           75. (previously presented) The apparatus of claim 71, wherein the microprocessor  
2 calculates one or more percentile values of the data set and identifies the characteristic  
3 abnormal pattern or distribution based on the one or more percentile values.

1           76. (previously presented) The apparatus of claim 75, wherein the microprocessor  
2 calculates the 10th percentile value of the data set and identifies the characteristic abnormal  
3 pattern or distribution based on the 10th percentile value.

1           77. (currently amended) An apparatus for early detection of subacute, potentially  
2 catastrophic infectious illness in a patient, wherein the patient is selected from the group  
3 consisting of a premature newborn infant, infant, newborn infant, toddler and child, comprising  
4 (1) a monitoring device, continuously monitoring the patient's RR intervals, and (2) a  
5 microprocessor, said microprocessor performing steps comprising:

- 6           (a) generating a normalized data set of the RR intervals;  
7           (b) calculating one or more of (i) moments of the data set selected from the third and  
8           higher moments and (ii) percentile values of the data set; and  
9           (c) identifying an abnormal heart rate variability based on one or more of the moments  
10          and the percentile values.

1 78. (withdrawn-original) The apparatus of claim 77, wherein the microprocessor  
2 calculates the third moment of the data set.

1 79. (withdrawn-original) The apparatus of claim 77, wherein the microprocessor  
2 calculates the fourth moment of the data set.

1 80. (withdrawn-original) The apparatus of claim 77, wherein the microprocessor  
2 calculates the 10th percentile of the data set.

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